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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/636,814	08/10/2000	David J. Edlund	NPW 307	7039

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EXAMINER	
BHAT, NINA NMN	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/636,814	EDLUND ET AL.	
	Examiner	Art Unit	
	N. Bhat	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *5,7 and 8* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6 and 9-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-37* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's arguments have been fully and carefully considered and found partially persuasive for reasons of record in the office action of February 23, 2005 and the following: Applicant's amendments to the claims have been considered and entered. The examiner acknowleges claims 1-31 are pending, applicant has added new claims 32-37 and claims 5 and 7-8 are withdrawn from further consideration. Applicant's arguments regarding the obviousness type double patenting rejection over 6,375,906 and provisional obviousness type double patenting over 10/126,557 is persuasive. Accordingly the double patenting rejection is withdrawn because the instant examiner concurs that the cited patent and application claims are directed to a feedstock delivery systems which include heated tanks of water through which gaseous hydrocarbons are bubbled there through to produce a humidified gaseous feed stream to the fuel processor. Upon reviewing the claims, the instant examiner has noticed some 112, second paragraph problems which unfortunately is different than those pointed out by the previous examiner. With the new 112, second paragraph rejections, the office action will again be non-final. Applicant is encouraged to make the changes as suggested by the examiner so that the examiner can move prosecution along and hopefully with the changes the art rejection will eventually obviated. Regarding the 35 U.S.C. 102 and 103 rejections, applicant's arguments are somewhat persuasive. The amendments made to the claims obviate the 102 rejection, however, it is the opinion of the instant examiner that a 103(a) rejection is warranted a new 103(a) rejection follows:

2. Claim 1-4, 6, 9-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. From the MPEP, when examining claims for compliance under 35 U.S.C. 112, 102 and 103(a) "the subject matter of a properly construed claim is defined by the terms that limit its scope. It is this subject matter that must be examined. As a general matter, the grammar and intended meaning of terms used in a claim will dictate whether the language limits the claim scope. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. The following are examples of language that may raise a question as to the limiting effect of the language in a claim:

(A) statements of intended use or field of use,

(B) "adapted to" or "adapted for" clauses,

(C) "wherein" clauses, or

(D) "whereby" clauses.

This list of examples is not intended to be exhaustive. >See also MPEP § 2111.04." In all of the instant claims, applicant has used "adapted to" language and "further adapted to" language which renders the claim indefinite and does not limit the scope of the claim. Applicant may argue that there are plenty of patents issued with "adapted to" language and "adapted for" language including applicant's own patents, however, applicant is kindly suggested to amend the claims so that there is no interpretation issues and that adapted to language may not require the steps to be performed or does

not limit a claim to a particular structure. Applicant is strongly advised not to use "adapted to" language when drafting claims.

In claim 1, ""volatile carbon containing feedstock" lacks positive antecedence. The preamble of the claim recites "volatile feedstock".

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: supply of volatile feedstock in operative connection with the plurality of heated reservoirs. This supply of volatile feedstock is claimed in claims 10 and 13 this should be included in claim 1.

In claim 3, applicant recites " a system of claim 2 wherein the heating assembly is adapted to selectively apportion the heated fluid stream between the plurality of reservoirs. This is incorrect, applicant is directed to note Figure 3 and the specification pages 8-10, the fluid is not heated prior to entering the heated reservoirs 52a and 52b, the stream is apportion by valve 50 which is prior to any heating. The feedstock stream is pumped from the feedstock reservoir 38 via pump 46 via, line 48 to valve 50 where the stream is split to provide feedstock to heated reservoirs 52a and 52b, valve 58 and directs heated propane to the steam reformer. Further applicant teaches in the specification on Page 10, that valve assemblies 50 and 58 operate in unison to ensure that one supply reservoir is being refilled while the other is providing propane stream 42 to the fuel processor. Correction is required.

Claims 10 and 13 are rejected as being substantial duplicates of each other. In order to expedite prosecution a sample draft of claim 1 follows:

Claim 1. A fuel processing system comprising a volatile feedstock delivery feed assembly, a steam reformer, and fuel stack fluidly connected wherein the feed assembly comprises a supply of volatile feedstock in fluid connection with a plurality of heated reservoirs to receive and store under pressure a volume of volatile feedstock; a heating assembly in fluid connection to heat the plurality of reservoirs, an outlet conduit from the reservoirs providing a heated feedstock stream to an inlet of the steam reformer; an from the steam reformer providing a hydrogen gas stream to the inlet of a fuel cell stack.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-4, 6 and 9-37 are rejected under 35 U.S.C. 103(a) as being obvious over Swenson et al. in combination with Edlund et al. 6,376,113.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject

matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

As stated in the previous office action of February 23, 2005, Swenson et al. teaches the invention substantially as claimed. Swenson et al. teach a system of delivering liquid natural gas which has been stored in a tank(201) which is pumped to a plurality of heated reservoirs (203a-203d) which includes heat exchanges which heat the liquid methane and then delivers the methane to a vehicle. The feed delivery system includes a control system, there are temperature and pressure regulating means and sensors. In Figure 5, the system includes liquid nature gas storage which is stored at a low pressure converts the LNG to natural gas in the vapor phase which is used in natural gas fuel driven vehicles. Swenson teaches that process control 268 monitors the pressure and temperatures within the vessels (203) and establishes and controls the relationships between the cycles of the vessels (203) so that as the capacity of one of he vessels is being filled with LNG, other capacity is being depleted and there is a continuity of flow of gas when the demand exists. The controller further controls the temperature and metering systems system (214) and raises the temperature of the gas

to a controller temperature at or near ambient temperature by the controlled addition of heat by measuring the temperature of the gas with the thermostatic control or sensor.[Note Columns 9, line 1 through Column 11, line 45].

However, Swenson does not teach providing a hydrogen gas stream which is directed to a fuel cell stack.

Edlund et al. teaches an integrated fuel cell system which includes a feed stock reservoir which includes carbon containing compounds such as hydrocarbons that produce hydrogen by steam reforming. Edlund teaches that pump 20 moves feedstock from the reservoir and delivers the feedstock to the fuel processor. Pump (21) moves water from the reservoir and delivers water to the fuel processor. The pumps provide feedstock and water to the fuel process at a pressure range from ambient to 300 psig. Edlund et al. teaches that fuel process (12) is a steam reformer with internal hydrogen purification. With respect to heating the feedstock prior to entering the steam reformer Edlund teaches that one having ordinary skill in the art recognizes that the process of steam reforming involves reaction of a feedstock with water at elevated temperature and is generally known to those skilled in the art, the operating temperature of stream for reforming reactions is between 250°C and 1300°C. Edlund teaches that how to start-up and heat the reformer is well known. Edlund further teaches using heat exchangers which can utilize various streams from the fuel cell system which can be used counter-current exchange to heat the incoming feedstock and/or water stream prior to entry into the fuel processor is also known and contemplated.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a fluid delivery system and heating system such as has been taught by Swenson for heating up a volatile feedstock material using a plurality of heated reservoirs for delivering a heated output stream to a fuel processor such as has been taught by Edlund because Edlund has taught that supplying a heated fuel stream to a steam reformer is well known and the operating conditions are well known and that any fluid delivery system which provides heated fuel and water to the steam reformer is applicable and operable in Edlund's invention and therefore to substitute a system such as taught by Swenson does in fact render applicant's invention as a whole obvious to one having ordinary skill in the art at the time the invention was made.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The examiner fully recognizes that none of the art which will be cited and discussed below qualifies as prior art. However, the examiner would like to direct applicant's attention to these references to show there is high activity in this area. Swanson teaches an infrastructure for the production, distribution and dispensing of hydrocarbons and hydrogen. Fuglevand teach a method for delivering a gas. Ovshinsky et al. teach a hydrogne-based ecosystem. Edlund et al. 6,375906 teach steam reforming methods and apparatus incorporating a hydrocarbon feedstock.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

N. Bhat
Primary Examiner
Art Unit 1764